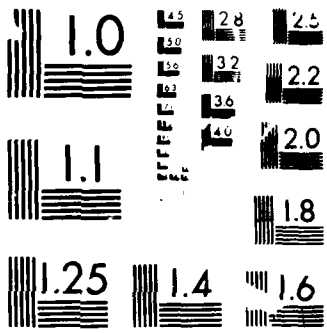
AD-A188 010 DEVELOPMENT OF A COPING STRATEGIES QUESTIONNAIRE TO ASSESS ENDURANCE PERFORMANCE(U) ARMY RESEARCH INST OF ENVIRONMENTAL MEDICINE NATICK MA W J THARION ET AL. 1/1

UNCLASSIFIED 16 OCT 87 F/G 6/10 NL



MICROCOPY RESOLUTION TEST CHART

NBS 1963 A

(1)

DISPOSITION FO

For use of this form, see AR 340-15, the proponent agency is T/

REFERENCE OR OFFICE SYMBOL	SUBJECT
SGRD-UE-HP	Request

M)

TO Commander, USARIEM FROM Dir, H&P Div DATE 16 Oct 87 CMT 1

1. Reference USARIEM Memo 360-1, request clearance of attached [X] manuscript, [ ] abstract, [ ] presentation, [ ] technical report, [ ] review article. Report Documentation Page, DD Form 1473 (is)(is not) attached.

Title Development of a Coping Strategies Questionnaire to Assess Endurance Performance

Author(s) William J. Tharion and Alyssa Terry

Intended for publication in Proceedings of the 29th Annual Conference of the MTA

Intended for presentation before _____ Location _____ Date _____

2. Budget Project No. 3M161102BS15 Cost Code 8480082101006

3. Attached contains no classified material. It meets accepted standards for scientific accuracy and propriety. It contains no potentially sensitive or controversial items.

Encl

TERRY M. RAUCH, Ph.D.
MAJ, MS
Director, Health & Performance Division

SGRD-UEZ ( )

THRU Chief, Admin Svc Br FROM Commander DATE 19 Oct 87 CMT 2

TO ch ~~Hed~~ H&P Div

[X] Clearance is granted.

[ ] Clearance is not granted.

[ ] This document must be forwarded to USAMRDC for clearance.

David D. Schnakenberg

DAVID D. SCHNAKENBERG
Colonel, MS
Commanding

Encl
nc

CLEARANCE NO. M4-88

NATICK FL 453
1 Jun 86 EDITION OF 1 DEC 84 IS OBSOLETE.

DA FORM AUG 80 2496 PREVIOUS EDITIONS WILL BE USED

Development of a Coping Strategies Questionnaire to Assess Endurance Performance

William J. Tharion and Alyssa L. Terry
United States Army Research Institute of Environmental Medicine
Natick, MA 01760

When assessing the performance of two individuals trained similarly for a sustained operation (an operation lasting longer than six hours) or other endurance related tasks, a question that often arises is "why is one individual able to complete the mission or task while his similarly trained partner is unable to do so?" This question is also frequently examined in the athletic arena, especially for long endurance events. In all of these cases, psychological explanations are often given to explain why one individual is able to successfully cope with the demands of the activity and finish it, while another individual is not able to. Understanding how successful soldiers and athletes cope with the stresses involved in endurance events should allow for a better understanding of superior performance.

The purpose of this study was to develop a questionnaire to assess coping strategies employed to help combat the physical and psychological stresses associated with endurance activities. The questionnaire was designed to be easily modifiable to specific situations and therefore, applicable to many types of endurance activities. The first application of the questionnaire was for use in a 100-mile trail run.

The strategies and practices included in the questionnaire were drawn from several sources. One primary source was a preliminary set of studies conducted on armor and infantry units in a simulated contaminated nuclear, biological, or chemical (NBC) environment (Munro, Rauch, Banderet, Lussier, Tharion, and Shukitt, 1987 and Posen, Munro, Mitchell, Satterthwaite, 1985). In these NBC studies a program was conducted where soldiers were coached on relaxation and other stress management procedures. The soldiers then participated in a sustained operation scenario. After this scenario, they were asked which coping strategies they felt were helpful in their completion of that particular scenario. Some of the strategies for this questionnaire were developed from direct interviews with these soldiers and from the initial coping strategies developed by Munro et al. (1987).

Another primary source of coping strategies was the sport psychology literature. Morgan found that elite distance runners tend to use associative techniques (strategies related to monitoring body sensations) to cope with the demands of distance running as opposed to non-elite distance runners who utilized dissociative techniques (strategies designed to ignore painful body sensations) (Morgan & Pollock, 1977). More recently others have found that it is not quite so clear cut and that a number of factors such as distance run, type of run, etc. have significant confounding effects (McCutcheon, 1983 and Sacks et al., 1981). Other sources of strategies included in the questionnaire are those that have been reported in use by athletes in the popular and scientific literature (Klavora, 1979; Kroll, 1982; Morgan, 1978 and Nideffer, 1985).

The coping strategies questionnaire contained 29 strategies and consisted of pre-race and during-race sections. These strategies were divided into five categories: (1) eleven strategies dealing primarily with psychological processes (e.g. used positive mental imagery), (2) eight training or event strategies (e.g. tapered for this race), (3) two dietary practices (e.g. did carbohydrate loading), (4) three social interactions (e.g. purposely ran with others), and (5) five physiological/body processes (e.g. focused on body functions such as heart rate, breathing, etc.). Subjects were asked to check a particular strategy if they used it in preparation for or during the race. Subjects were also asked if each of the strategies they used was perceived to be helpful in running the race. Presented below is a preliminary study using this coping strategy questionnaire.

Subjects

Subjects were drawn from the population of entrants at the Old Dominion 100-Mile Trail Run. The subjects consisted of 35 race entrants who volunteered to participate in the study. At the pre-race briefing, all subjects were instructed to read and asked to sign a volunteer agreement of informed consent.

Procedure

All subjects were administered the coping strategies questionnaire as promptly as possible upon completion or withdrawal from the race. Withdrawal from the race was either for voluntary, administrative, or medical reasons. Administrative withdrawal was primarily due to missed cut off times at check points. Runners were required to reach specific mile marks in pre-determined elapsed times. Subjects were encouraged to complete the questionnaire as soon as possible upon termination of their run. The questionnaire took approximately five minutes to complete. Some subjects were in a state of extreme fatigue and required varying amounts of recovery time of up to one hour before they filled out the questionnaire.

Results

After the 100-mile trail run was completed, subjects were divided into two groups: survivors and casualties. Survivors were those subjects who completed the run in under 30 hours (official cutoff time set forth by the race directors). Casualties were those subjects who did not complete the run. The subject pool consisted of 24 survivors and 11 casualties.

No significant differences were observed using a t-test in the total number of strategies used between groups. In addition, no differences in total number of strategies used were observed when considering pre or during-race strategies only. Furthermore, when the questionnaire was divided into the five categories, no significant differences were observed between groups in total number of strategies used.

Although there were no differences between the number of strategies used, survivors reported significantly more ($p < .05$) of the strategies that they did use as being helpful than casualties did via a t-test (see

table). In addition, survivors reported significantly more strategies as being helpful than the casualties reported when strategies were broken down and examined by the following subsets of strategies: pre-race, psychological, training, and dietary; all significant at the $p < .05$ level.

Strategies were rank ordered by the percent of subjects in each group that used a particular strategy. The most dramatic differences in the rank order occurred for the following strategies: 1) congratulated oneself after attaining an intermediate goal, 2) had friends and familiar faces on the course, 3) focused on maintaining running form, 4) had planned breaks for food and drink, 5) constantly adjusted pace, and 6) considered dropping out of the race. Survivors had a greater percentage of people using the first four, while casualties had a greater percentage of people using the latter two.

Discussion

The questionnaire was successful in identifying various differences in the way survivors and casualties report to have used and been helped by the coping strategies. An obvious difference between the groups lies in the number of strategies that were reported to be helpful. Survivors report significantly more of the strategies they have used as having helped their performance. It is plausible that their positive attitude towards the use of coping strategies was instrumental in the survivor's ability to complete the race. Previous research supports the notion that belief in coping strategies enhances performance (Weinberg, Smith, Jackson, and Gould, 1984). Girodo and Wood (1973) found that positive self-talk while trying to cope with an aversive and painful task was instrumental when 1) the subject believed in the effectiveness of positive coping statements and 2) the subject believed they did have personal control of the situation. The casualties perceived ineffectiveness of a coping strategy may be due to a lack of confidence in the strategy and control over the strategy. Further development of the "helped" section of the questionnaire could provide additional insight into the different ways survivors and casualties perceive coping strategies.

Not only did the questionnaire show that survivors felt more of the strategies they used were helpful, it also showed that survivors perceived psychological strategies as being at least as helpful as the training strategies. Conversely, the casualties felt training strategies were more helpful than psychological strategies. The survivors felt that 94% of the psychological and 92% of the training strategies they used were helpful; while the casualties felt that only 34% of the psychological and 42% of the training strategies they used were helpful. This finding of the questionnaire supports the contention that successful completion of long endurance event requires much more than mere physical preparation (Weinberg et al., 1984).

Previous research has identified various types of coping strategies as being related to endurance events: association vs. dissociation (Morgan & Pollock, 1977), positive self-talk (Girodo & Roehl, 1978), and combinations of these approaches (Wienberg et al., 1984). Based upon

COPING STRATEGIES
MEAN NUMBERS USED AND HELPED

	SURVIVORS			CASUALTIES		
	USED	HELPED	PERCENT	USED	HELPED	PERCENT
Total Strategies (29)	11.1	10.2	92%	12.8	6.7	52%
Pre-Race Strategies (13)	4.5	4.2	92%	5.0	1.9	38%
Psychological Strategies (11)	2.7	2.5	94%	3.2	1.1	34%
Training Strategies (8)	3.7	3.3	89%	4.7	2.0	42%
Dietary Strategies (2)	1.2	1.2	100%	.9	.6	70%

*percent is number helped over number used
*numbers in parentheses are total possible

100 MILE TRAIL RUN (significant results only)

this preliminary study with the ultramarathoners, another type of general coping strategy is put forth post hoc: the partitioning of the event into segments. Strategies like planned breaks for food and drink and congratulated oneself after attaining intermediate goals are examples of strategies that partition the race into segments. Survivors were observed using these types of strategies to a greater extent than casualties. By breaking down the race into sections and racing each section as opposed to racing all 100 miles, the runner may be better able to cope with the stressors involved. Some preliminary work done with armor crews support this finding. Munro et al. (1987) found that survivors work from task to task as opposed to dwelling on the length of the operation. Future development of the questionnaire will add strategies that will further examine the hypothesis that successful individuals employ strategies that effectively break the endurance event into segments.

Future Use

This coping strategies questionnaire has been designed to be used in the assessment of endurance activities. Other athletic events that require endurance such as the marathon, the triathlon, and the winter biathlon will be examined. The National Guard sponsors a biathlon training center at Camp Johnson in Winooski, Vermont where the questionnaire's use has been proposed.

Plans to modify and use the questionnaire for field sustained operation studies and laboratory sleep deprivation studies have been made. Only slight adjustments of the present questionnaire will be necessary for military application. For example, looking at a sustained operation with armor gear may change the strategy from "tried new training strategies for this particular race" to "tried new training strategies for this particular operation" (e.g. worked on third shifts, did night training, trained in MOPP gear, and trained with simulators). Like in the trail run, the questionnaire would be used to examine the strategies individuals use to complete a long and arduous endurance event.

References

Girodo, M. & Roehl, J. Cognitive preparation and coping self-talk: Anxiety management during the stress of flying. Journal of Consulting and Clinical Psychology, 1978, 46, 978-989.

Girodo, M. & Wood, D. Talking yourself out of pain: The importance of believing that you can. Cognitive Therapy and Research, 1979, 3, 23-33.

Klavora, P. and Daniel J.V. Coach, athlete, and the sport psychologist. Human Kinetics Publishers, 1979.

Kroll, W. Competitive athletic stress factors in athletes and coaches. In Zaichkowsky, L.D. and W.E. Sime (Eds.). Stress management for sport. AAHPERD, Reston, VA., 1982, 1-10.

McCutcheon, L. Psychology for the runner. Forefront Publishing, Occoquan, VA., 1983.

Morgan, W.P. The mind of the marathoner. Psychology Today, 1978, 11, 38-40,43,45-46,49.

Morgan, W.P., & Pollock, M.L. Psychologic characterization of the elite distance runner. Annals of the New York Academy of Sciences, 1977, 301, 382-403.

Munro, I., Rauch, T.M., Banderet, L.E., Lussier, A.R., Tharion, W.J., & Shukitt, B.L. Psychological effects of sustained operations in a simulated NBC environment on M1 tank crews. United States Army Research Institute of Environmental Medicine, Natick MA., Technical Report T-26-87, July 1987.

Nideffer, R.M. Athlete's guide to mental training. Human Kinetics Publishers, Champaign, IL., 1985.

Posen, K.J., Munro, I., Mitchell, G.W., & Satterthwaite. Innovative test of physiological and psychological effects of NBC and extended operations on mechanized infantry squads (Infantry P^2NBC^2). United States Infantry Board, Fort Benning, GA., USAIB Project 3807, September 1985.

Sacks, M.H., Milvy, P. Perry, S.W., & Sherman, L.R. Mental status and psychological coping during a 100-mile race. In Sacks, M.H. and M.L. Sacks (Eds.). Psychology of running. Human Kinetics Publishers, Champaign, al., 1981, 166-175.

Weinberg, R.S., Smith, J., Jackson, A., & Gould, D. Effect of association, dissociation and positive self-talk strategies on endurance performance. Canadian Journal of Applied Sport Sciences, 1984, 9(1), 25-32.

END

FILMED

FEB. 1988

DTIC